System And Method For Measuring Position
of Optical Transmission Members In An Array
Inventor: Joseph L. Dallas et al
CVI-0011

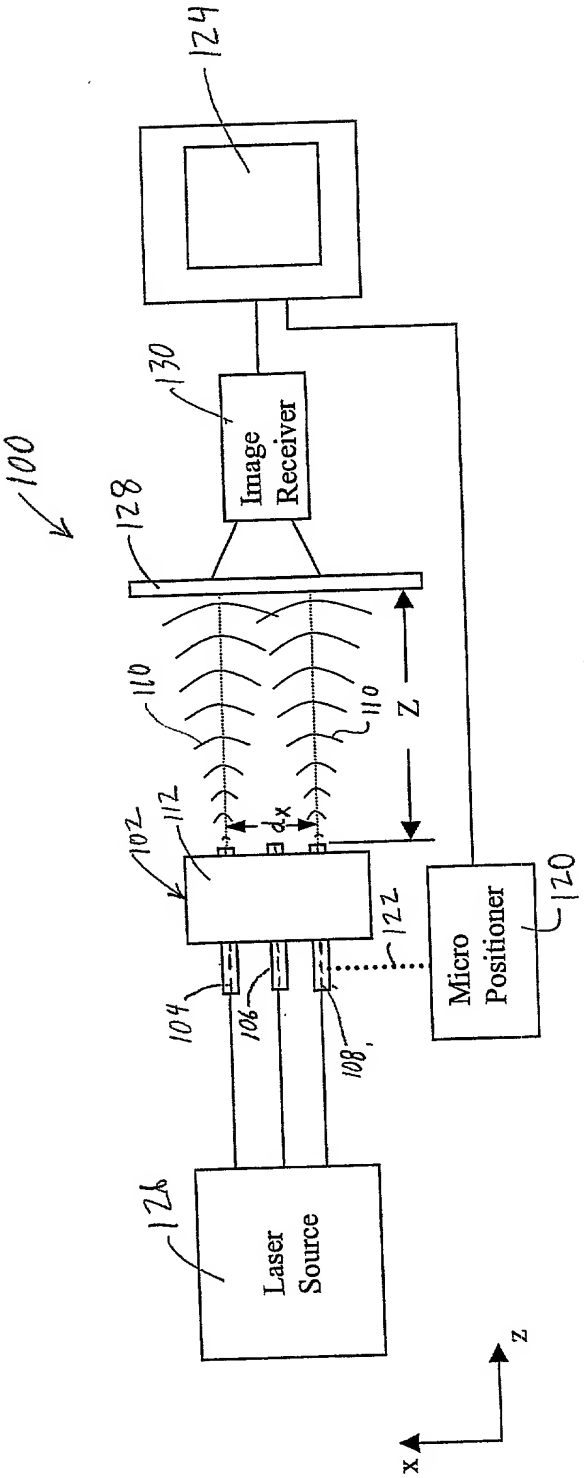

Fig. 1

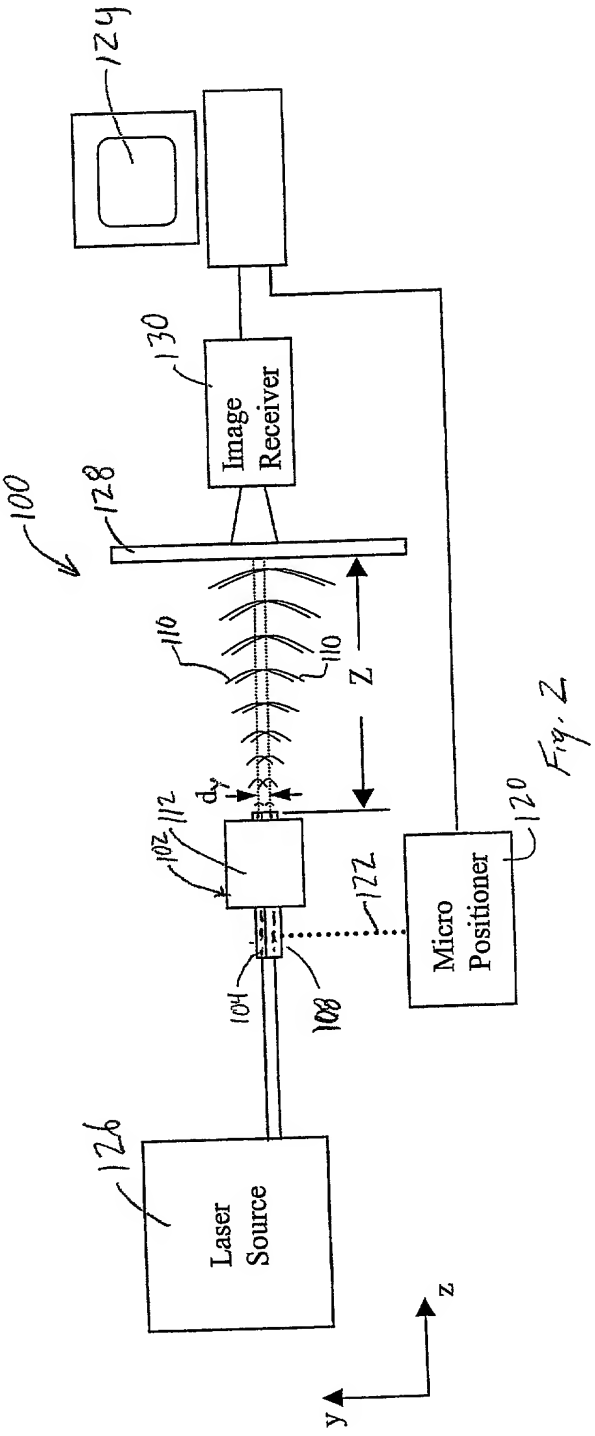

Fig. 2

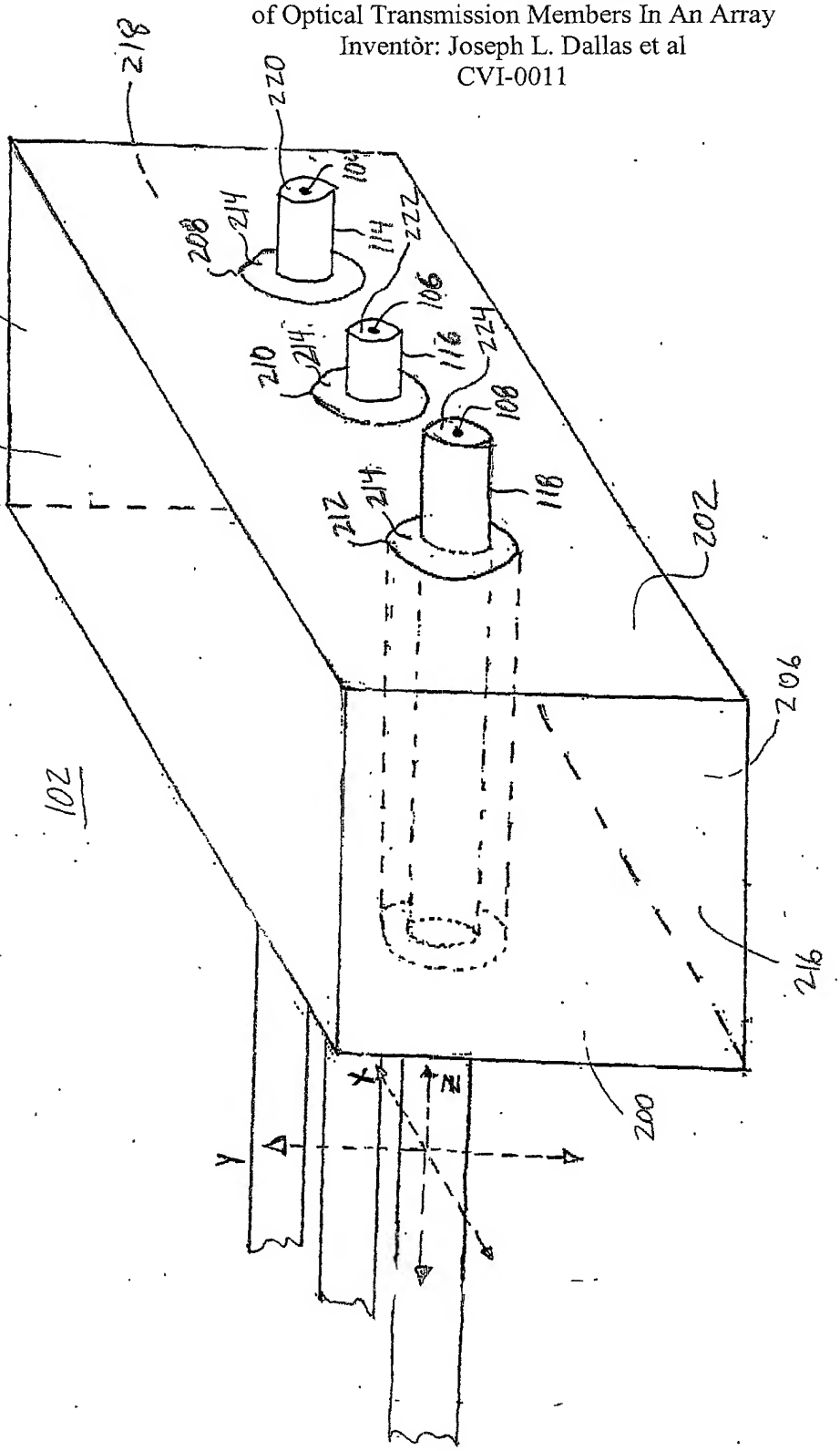

FIG. 3

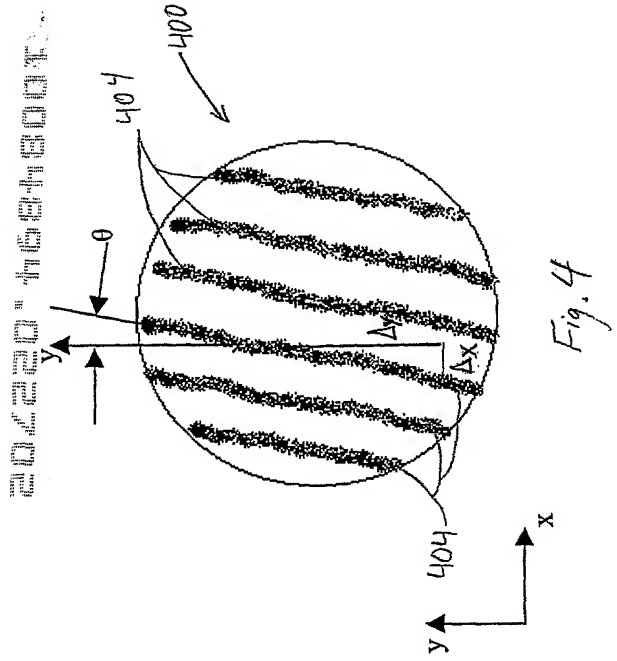

Fig. 4

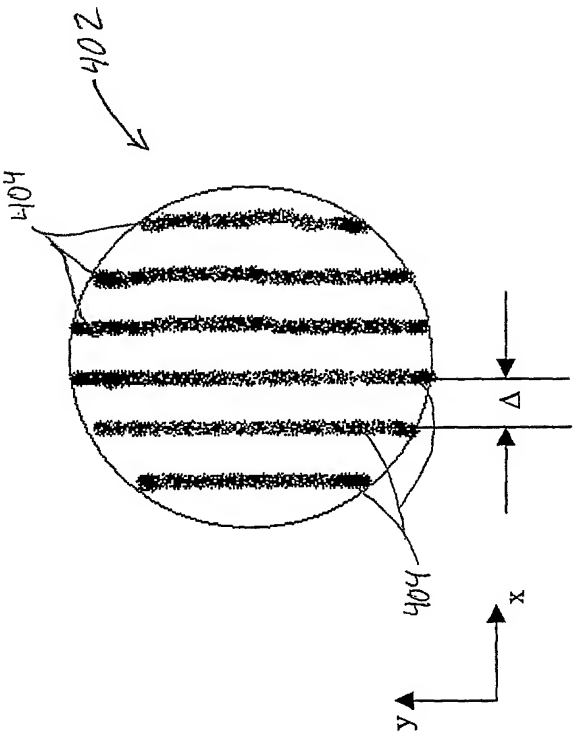

Fig. 5

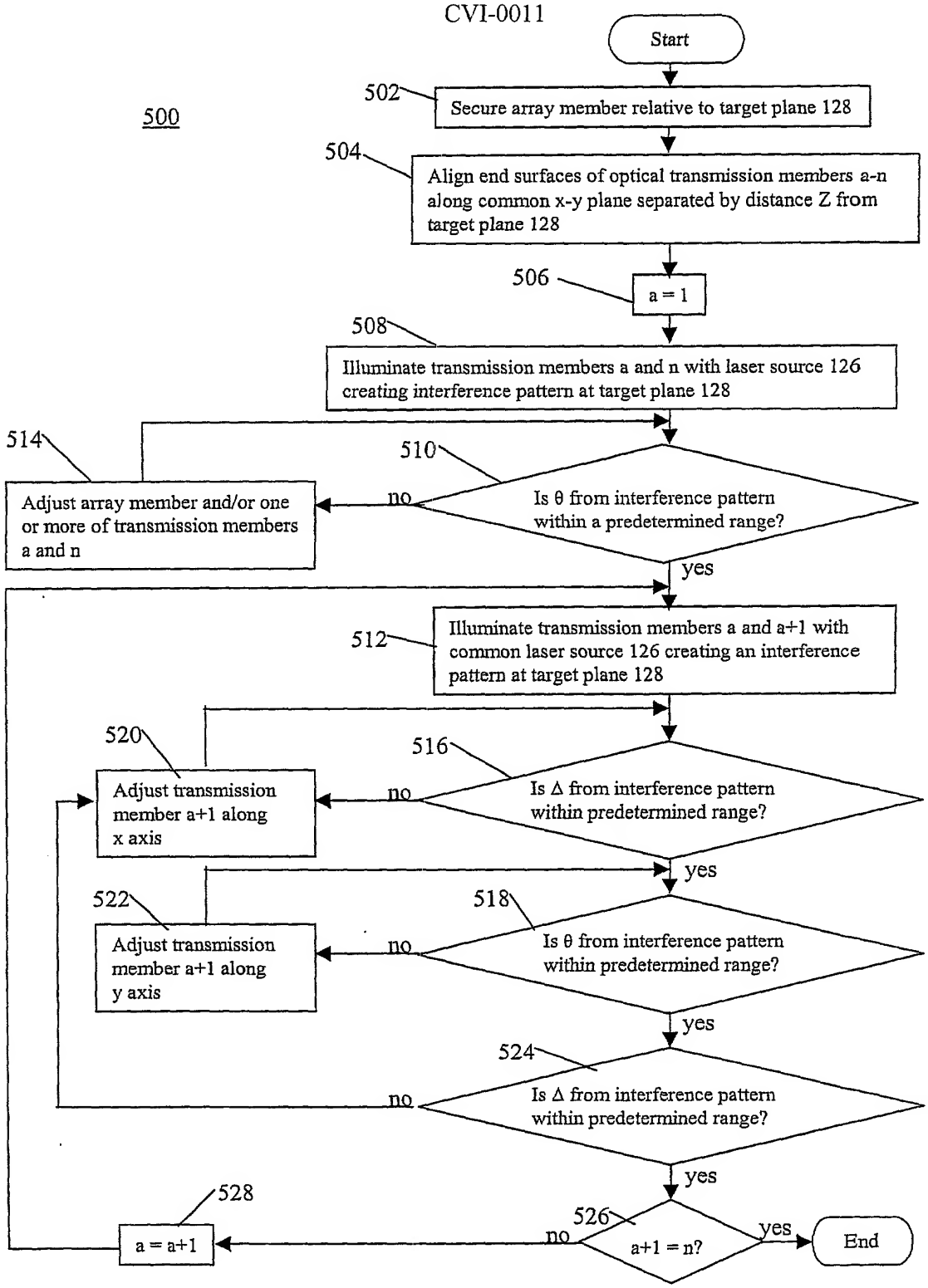
500
Start
502
Secure array member relative to target plane 128
504
Align end surfaces of optical transmission members a-n along common x-y plane separated by distance Z from target plane 128
506
a = 1
508
Illuminate transmission members a and n with laser source 126 creating interference pattern at target plane 128
514
Adjust array member and/or one or more of transmission members a and n
510
Is θ from interference pattern within a predetermined range?
no
yes
512
Illuminate transmission members a and a+1 with common laser source 126 creating an interference pattern at target plane 128
520
Adjust transmission member a+1 along x axis
516
Is Δ from interference pattern within predetermined range?
no
yes
522
Adjust transmission member a+1 along y axis
518
Is θ from interference pattern within predetermined range?
no
yes
524
Is Δ from interference pattern within predetermined range?
no
yes
528
a = a+1
526
a+1 = n?
no
yes
End

FIG. 6

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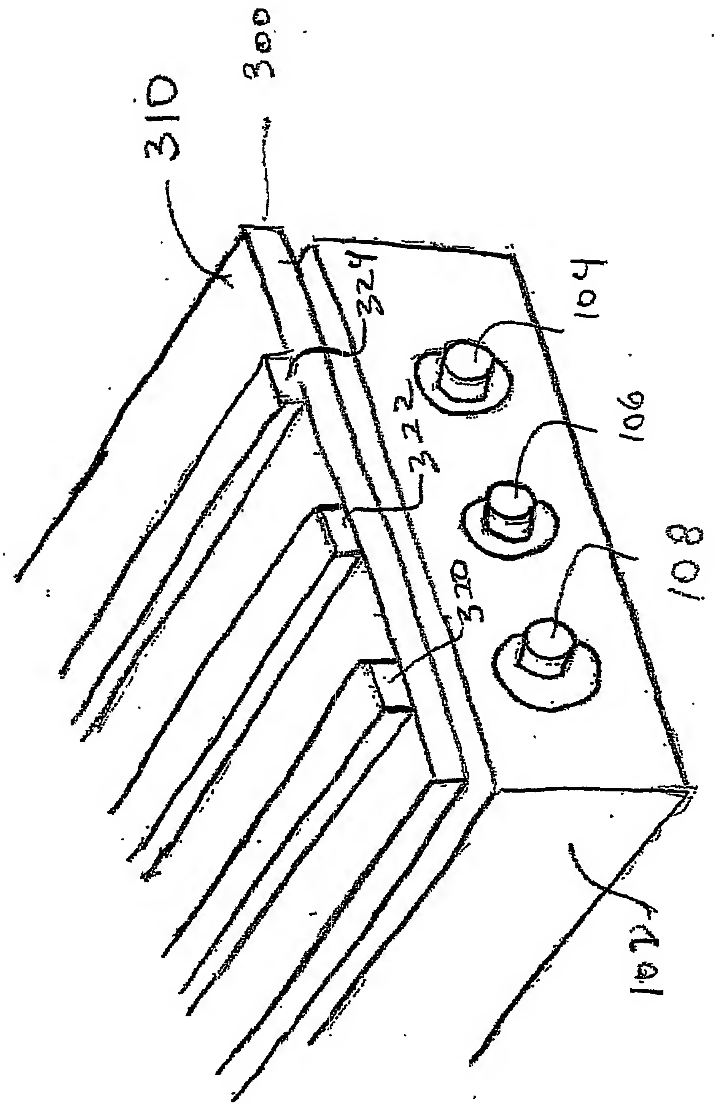
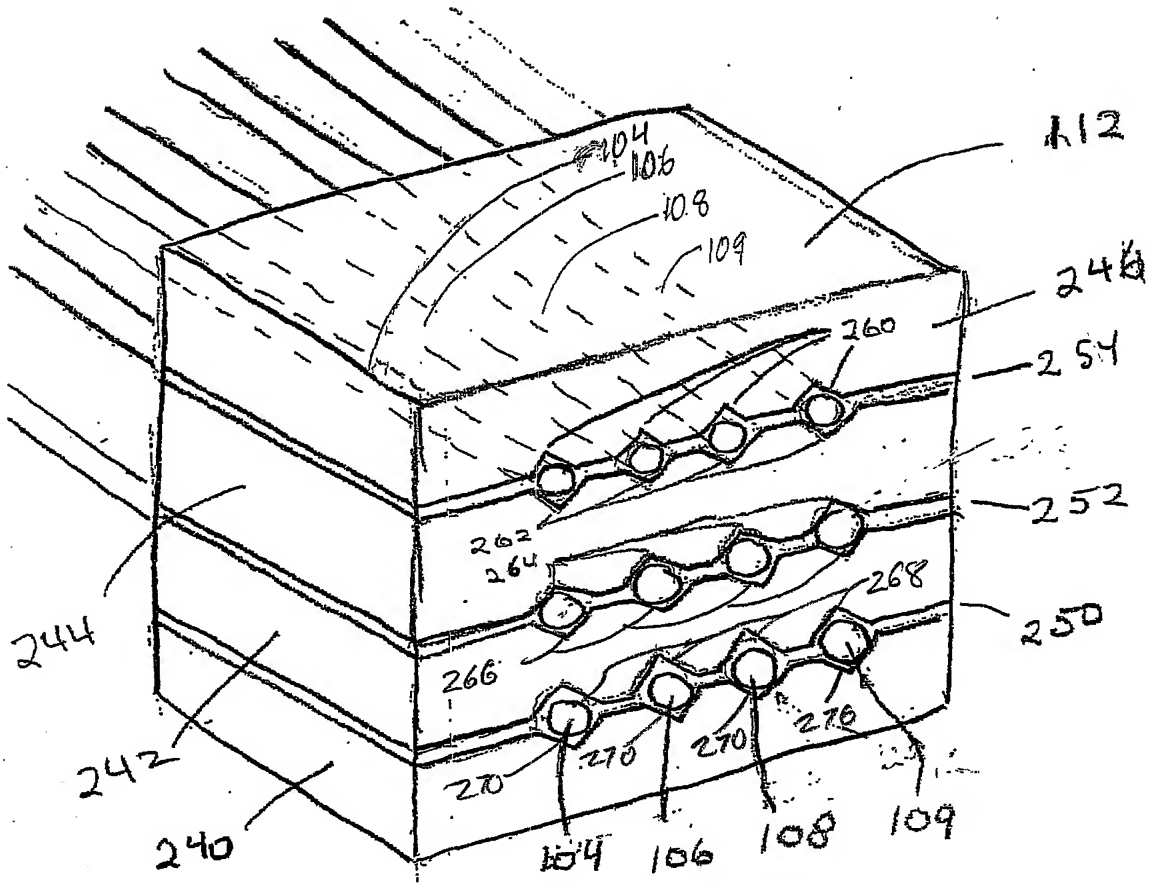


FIG. 7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270
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FIG. 8

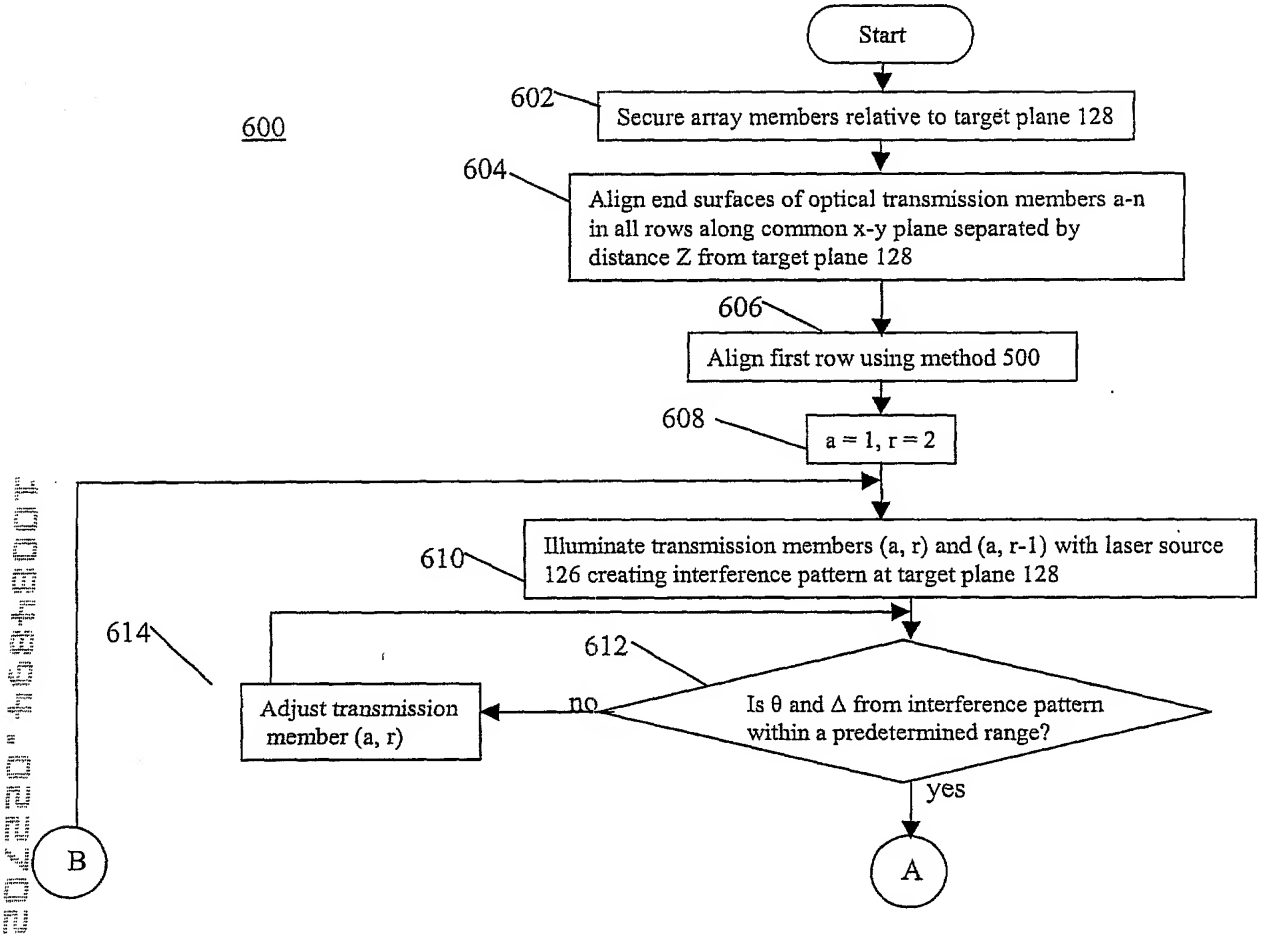
600
Start
602
Secure array members relative to target plane 128
604
Align end surfaces of optical transmission members a-n in all rows along common x-y plane separated by distance Z from target plane 128
606
Align first row using method 500
608
a = 1, r = 2
610
Illuminate transmission members (a, r) and (a, r-1) with laser source 126 creating interference pattern at target plane 128
612
Is θ and Δ from interference pattern within a predetermined range?
no
yes
614
Adjust transmission member (a, r)
B
A

FIG. 9A

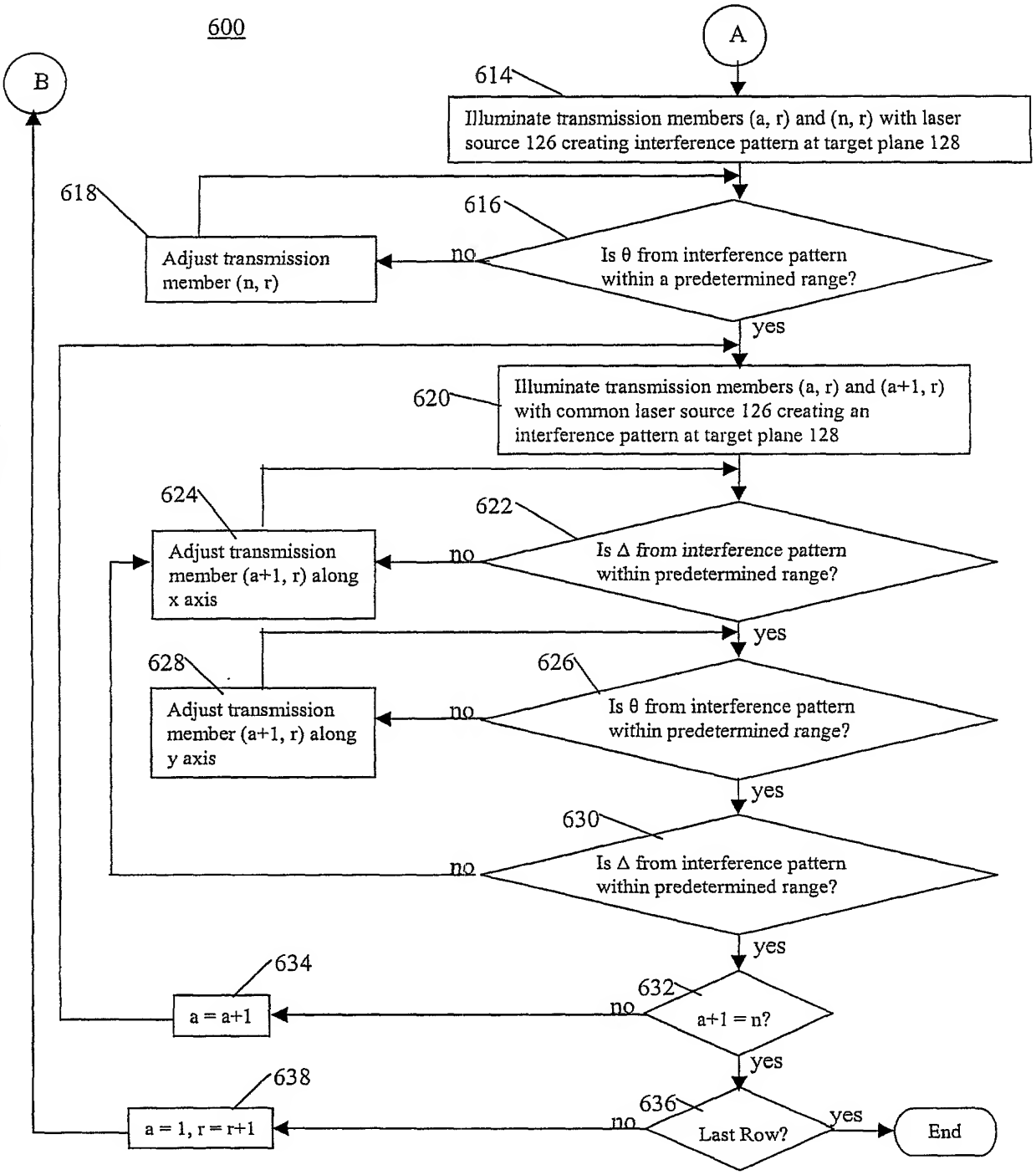
600
A
B
614
Illuminate transmission members (a, r) and (n, r) with laser source 126 creating interference pattern at target plane 128
618
616
Adjust transmission member (n, r)
no
Is θ from interference pattern within a predetermined range?
yes
620
Illuminate transmission members (a, r) and (a+1, r) with common laser source 126 creating an interference pattern at target plane 128
624
622
Adjust transmission member (a+1, r) along x axis
no
Is Δ from interference pattern within predetermined range?
yes
628
626
Adjust transmission member (a+1, r) along y axis
no
Is θ from interference pattern within predetermined range?
yes
630
no
Is Δ from interference pattern within predetermined range?
yes
634
632
a = a+1
no
a+1 = n?
yes
638
636
a = 1, r = r+1
no
Last Row?
yes
End

FIG. 9B